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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,939	07/03/2003	Francis M. Haran	0145P35US01	5429

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SHAPIRO COHEN
P.O. BOX 3440
STATION D
OTTAWA, ON K1P6P1
CANADA

EXAMINER	
NGUYEN, TU T	

ART UNIT	PAPER NUMBER
2877	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/611,939	HARAN, FRANCIS M.	
	Examiner	Art Unit	
	Tu T. Nguyen	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 17-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10 and 11* is/are allowed.

6)☒ Claim(s) *1,2,5-9 and 12* is/are rejected.

7)☒ Claim(s) *3,4,13,14 and 17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al (5,384,635).

With respect to claim 1, Cohen discloses an apparatus for detecting a disturbance (abstract) at a determinable portion along a length of optical fiber 18 (fig 1). The apparatus comprises: a transmitter leg 14 (fig 1) for launching a pulsed polarized optical signal (column 3, line 37); a sensor leg 18 (fig 1) for carrying a portion of said polarized optical signal within said optical fiber; and a receiver leg 26 (fig 1) for accepting a portion of a backscattered optical signal from said sensor leg; wherein said backscattered optical signal provides polarization change (column 5, lines 12-20 or abstract) relative to said pulsed polarized optical signal sufficient to determine a location of a disturbance along said optical fiber (abstract).

Cohen does not explicitly disclose the timing information. However, Cohen discloses measuring a time interval or a time lapse between the launching and the receipt of the pulses for determining the location of the disturbance (column 2, lines 60-68 and column 3, lines 1-10 or column 8, lines 30-35). It would have been obvious to

modify Cohen with the claimed time information to determine the location of the disturbance along the fiber easier.

With respect to claim 12, refer to discussion in claim 1 above for the fiber. The non-locating sensor has not given any patentable weight because it is in the preamble. However, it would have been obvious to modify Cohen with a plurality of cable for sensing different characteristics of an object. The modification involves only routine skill in the art.

Claims 2,1-2/5,1-2/6,7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al (5,384,635) in view of Spillman (EP 0 320 255).

With respect to claim 2, Cohen discloses a transmitter leg 14 (fig 1) includes a polarized pulsed optical source (column 3, line 37), a sensor leg includes a length of sensing optical fiber 18 (fig 1) responsive to said disturbance, a receiver leg includes a polarizer 28 (fig 1) and a receiver 30 (fig 1) for processing a signal received from said length of sensing optical fiber.

Cohen does not disclose the claimed coupler. Spillman discloses a coupler 20 (fig 1). It would have been obvious to modify Cohen with the coupler as taught by Spillman to connect said transmitter leg, said receiver leg, and said sensor leg easier.

With respect to claims 1-2/5, 1-2/6, it would have been obvious a design choice to modify Cohen for detecting tamper or disturbances of different types of cables such

as, an optical telecommunication cable or a non-ranging sensor as claimed to use the system in different environments.

With respect to claim 7-8, the claimed optical based or electrical based sensing cable would have been known. Refer to discussion in claim 1-2/5 above for the motivation.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cohen et al (5,384,635) in view of Udd (5,627,927).

With respect to claim 9, Cohen does not disclose an optical switch such that multiple optical fibers are capable of being sensed. Udd discloses a sensing system. The sensing system comprises: an optical switch 250 (fig 17) such that multiple optical fibers are capable of being sensed. It would have been obvious to modify Cohen with the switch as taught by Udd for sensing different characteristics of an object without modify the system setup.

Allowable Subject Matter

Claims 10-11 are allowed.

Prior arts of record do not disclose a method of detecting a disturbance at a determinable portion along a length of optical fiber using backscattered optical signals that provide polarization change and timing information sufficient to determine a location of said disturbance, said method comprising: capturing a predetermined number of

reflected polarized signal traces from an optical fiber; digitally filtering said predetermined number of reflected polarized signal traces to form a plurality of digitally filtered traces; averaging said digitally filtered traces to form an average trace; obtaining a disturbance trace from said optical fiber; and, comparing said disturbance trace to said average trace so as to determine a disturbance at a portion of said optical fiber which structurally arranged and functionally operated as claimed in claim 10.

Claims 3-4,5-6/3,4,13,14,17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claims 3-4,5-6/3,4, Prior arts of record do not disclose the sensor leg, the receiver leg as claimed in claim 3 in combination with all the limitation of the base claim.

With respect to claims 14,17, Prior arts of record do not disclose a non-locating sensor cable for generating an electrical signal capable of being processed into an audio output indicative of a disturbance along said non-locating sensor cable; wherein said locating optical fiber and said non-locating sensor cable are physically integrated within a single jacketing as claimed in claim 14,17 in combination with all the limitations of the base claim.

With respect to claim 13, prior arts of record do not disclose processing signal response output and polarization change and timing information together to provide enhance detection.

Response to Arguments

Applicant's arguments filed 02/14/2006 have been fully considered but they are not persuasive.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **OTDR and POTDR**) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Since Applicant claims detecting backscattering signals and the prior art (Cohen) also discloses detecting the backscattering signals (abstract), it would have been obvious that the prior art could be read on the claimed invention.

In response to applicant's argument about the use on signal without cyclic characteristics or the timing based on the received pulses directly without timing based processing, the argued limitations are in the claim. The claim (claim 1) only claim detecting "timing information relative to the pulsed polarized optical signal". Since Cohen discloses measuring a time lapse between the launching and the receiving pulses (column 2, lines 60-68; column 8, lines 30-35). It would have been obvious that

Cohen would have to known the "timing information relative to the pulsed polarized optical signal" as claimed.

In response to applicant's argument about the sensor, applicant does not claim using the optical fiber as a sensor. Applicant only claims determining a location of a disturbance along an optical fiber. Further, the claimed "sensor leg" does not mean the fiber is a sensor.

In response to applicant's argument on claim 12, the claim is an independent claim. Further, refer to discussion in claim 12 above for the non-locating sensor cable.

In response to applicant's argument about claim 2, although Spillman relates to a frequency domain method, Spillman's coupler could be used in different system for directing a signal to any desired path. It would have been obvious to modify Cohen with Spillman's coupler for directing signals to any desired paths easier.

In response to applicant's argument about the claimed switch, Udd does disclose the claimed switch 250 (fig 17). It would have been obvious that Udd's optical fibers could be considered as a sensor cable as claimed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tu T. Nguyen whose telephone number is (571) 272-2424. The examiner can normally be reached on T-F 7:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley Jr. can be reached on (571) 272-2800 Ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tu T. Nguyen
Primary Examiner
Art Unit 2877

04/28/2006